National Tsunami Hazard Mitigation Program
MES Subcommittee, 24, 27 July 2012
National Tsunami Hazard/Risk Analysis Workshop, 25=26 July 2012
Seattle, WA

US Post-Tsunami Science Survey Protocol Status and Progress

Laura Kong, NOAA International Tsunami Information Center
Mike Shulters, USGS
Rick Wilson, California Geological Survey
Kevin Richards, Hawaii State Civil Defense
Gen Tamura, Tamra Biasco (FEMA Region IX, X)
Paula Dunbar, NOAA National Geophysical Data Center
Edward Young, NOAA NWS Pacific Region
Chris Chiesa, Pacific Disaster Center

NTHMP COORDINATION

- **National Tsunami Hazard Mitigation Program (NTHMP)**
  - Partnership sponsored by NOAA of Federal (NOAA, FEMA, USGS) and coastal States/Territories.
  - Develops / coordinates effective tsunami hazard reduction efforts in US over long term
- **For Survey, NTHMP representative should provide:**
  - Support to ITIC (NOAA) and impacted states/territories for coordinated and efficient response activities.
  - Support to impacted states to ensure needs met by field response teams, specifically data sharing
  - Facilitate timely provision of field (physical, structural, socialogical, etc)
  - Work with ITIC, FEMA, field teams, other stakeholder organizations (NSF, EERI, etc)

Post-Tsunami Field Surveys - History

- Over last 7 years, ~60 measured tsunamis.
- 9 caused deaths, most notably 26 Dec 2004 Indian Ocean tsunami (230,000 lives). Pacific: Apr 2007 (Solomons 54, Chile 3), Sep 2009 (Samoa 149, Am Samoa 34, Tonga 9), Chile (156), Japan (~20,000)
- After each tsunami, data collected to quantify impacts, response/recovery, improve numerical models, engineering (International Tsunami Survey Teams, ITST)
- ITIC helps to coordinate ITSTs for UNESCO/IOC (UN)

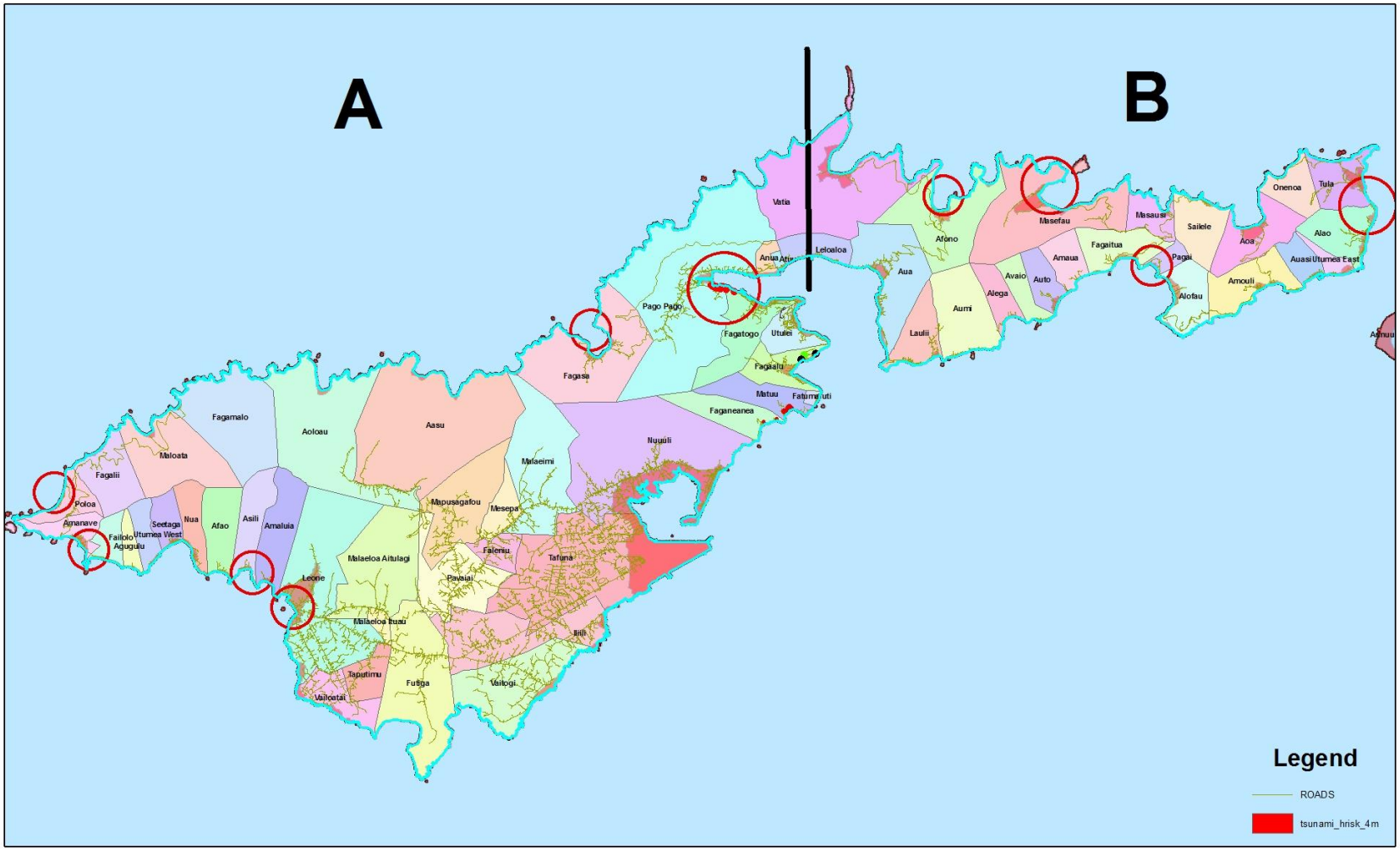
International Post-Tsunami Surveys

(evolving since IO 2004)

1. **Invited by country to help coordinate (IOC, ITIC)**
2. **Teams provide plan to ITIC**
3. **ITIC works with Country coordinator**
4. **IOC / ITIC, Host Country provides ITST Letter**
5. **ITIC provides ITST Badges for team members**
6. **Check-in with Country**
7. **Sharing on secure server (or other means)**
8. **Check-out with Country**
9. **Encourage final data to NGDC**

⇒ ***IOC Post-Tsunami Field Survey Guide (2012)***
Guidance, update techniques and methods

Tutuila, American Samoa
Damage island-wide



West side villages: Poloa (100%); Amanave (80%); Setanga(50%) Nua (50%); Asili (60%); Amaluia (80%) Leone (30%); Fagasa (60%), Pago Pago (60%)

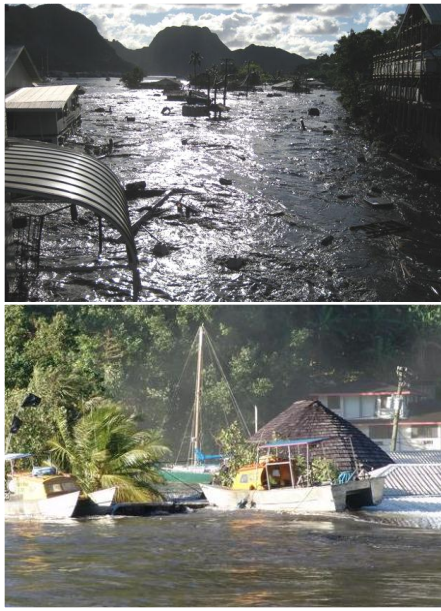
UNOFFICIAL PRELIMINARY ESTIMATES FOR SCALE ONLY

East side villages:: Afono (40%); Fagaitua (40%); Pagai (80%); Masefau (70%) Alao (30%); Tula (60%)

UNOFFICIAL PRELIMINARY ESTIMATES FOR SCALE ONLY

1st Experience in US - American Samoa (2009)

- FEMA / ASDHS lead role in disaster response
  Limited logistics (lodging, transportation, etc)
- Scientists: document before evidence disappears (inundation, runup, structure impact/scour, sediments, eyewitness …)
- NSF, GEER, ASCE … funded scientists to conduct tsunami impact surveys
  NO requirement to share w/Govt quickly.
  Some prefer anonymity (e.g., tourists)



- Federal / Local Govt Agency – Scientist coordination framework will improve situation
  => Data sharing can support response/recovery
  => But, plan needs to be in place beforehand

Post-Tsunami Survey Considerations: American Samoa vs. □ Next U.S. tsunami

American Samoa experience:

- In part from NWS/ITIC efforts, scientists gained unfettered access to disaster areas w/no req to rpt findings to GoAS.
- Scientists often collected Pt-source data (max, min flow depth, flow dir), 'no time' to collect primary data (runup, inundation lines).
- Little systematic mapping of inundated areas (teams sought extremes, duplicating data collection)
- 'ITST' name used as official sanction, but there was no such entity, except by science journal paper. Ad Hoc - different (competing) groups claimed ITST

Next US tsunami:

- Scientists likely denied access (e.g., Hawaii State CD issues ID)
-
- Better tsunami models now need complete data set
- In provide access, Authorities want inundation / runup extremes and inundation limit map.
- To avoid confusion, NSF remind fundees that while scientists can use data collected, it is State property, e.g., release in timely manner to govt for response
- Invoke US Post-Tsunami Protocol and State Plans.
  UNESCO - ITIC coord intl (ITST)
  (IOC PTFSG, 2012, coord by ITIC)

G. Fryer, PTWC; L. Kong, ITIC

Coordinated Post-Disaster Efforts

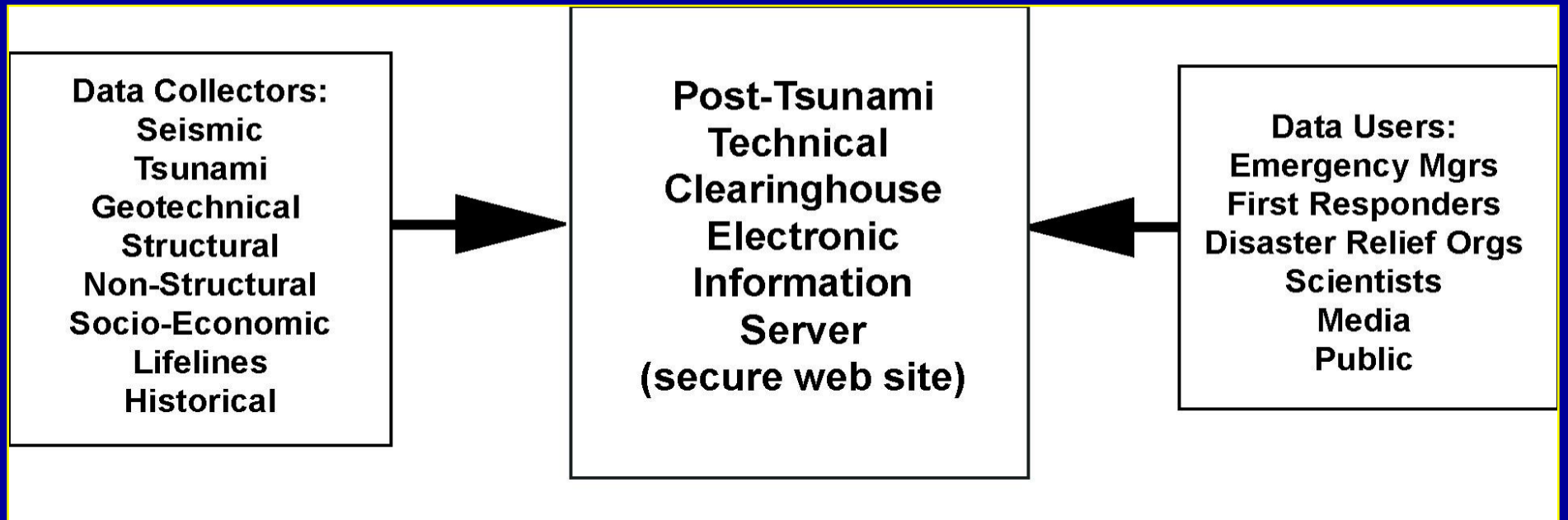
- **Disasters attract large number of local, national, international scientists to investigate scientific, economic, social impacts.**
  Better data => better models => better mitigation
- **At same time, Emergency Agencies must focus on saving lives, public safety, critical support lifelines and infrastructure, resource mobilization**
- **Needs data mgmt system integrated into emergency operations. More effective response**
- **For best Recovery decision-making, need all data available**

⇒ ***Science / Technical clearinghouse efficient framework for coordination, information sharing / data integration***

INFORMATION DATA SHARING

- *Needed during Surveys*
- *Essential post-Survey - collecting, compiling, sharing*
  - *Secure and Public Sites*
  - *Data collectors can post data*
  - *Data Users can access data; Public site for broad sharing*
  - *User-friendly, Simple-to-create graphics*

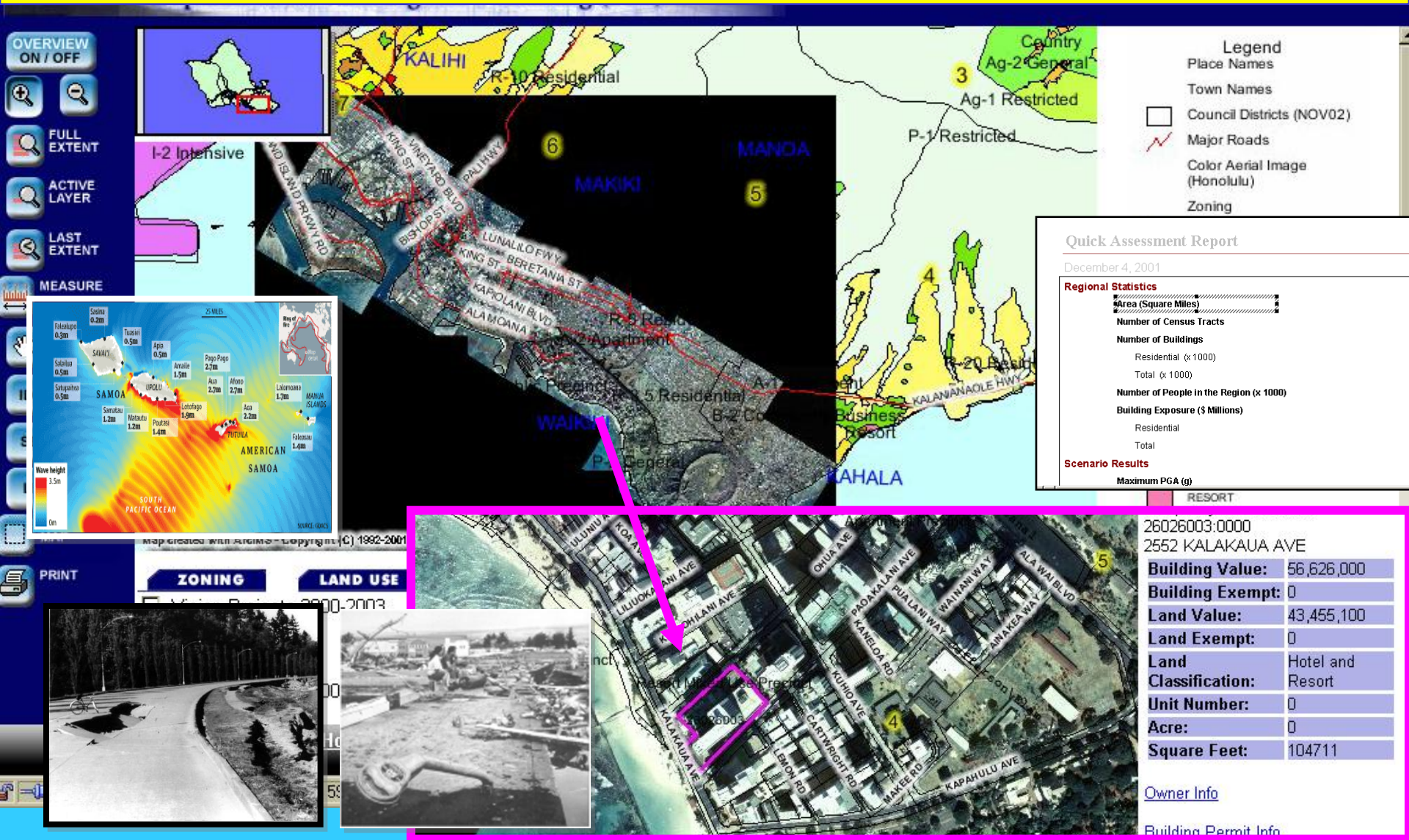
  Useful Data Summaries for Reports



Tsunami Technical Clearinghouse (GIS)

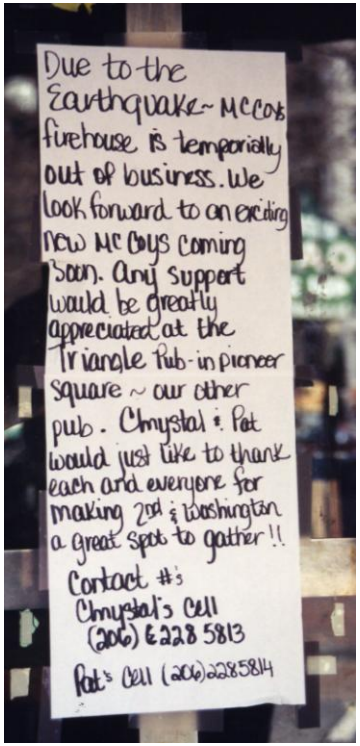
Pre-loaded data layers + Daily field reports

User-selectable, multi-layer data display



WHO NEEDS DATA: KEY PARTNERS

- **PHYSICAL SCIENTISTS/ENGINEERS:** need quick access to collect ephemeral data
- **SOCIAL SCIENTISTS:** interviews with public and officials essential to assessing lessons
- **AFFECTED COMMUNITIES/POPULATION:** relying on help to assure a quick recovery
- **EMERGENCY RESPONDERS:** need immediate info to assist response /recovery (local, state/territory, federal)



U.S. Post-Tsunami Science Survey Protocol Proposal

Laura Kong (NOAA), Michael Shulters (USGS), Rick Wilson (CA GS), Kevin Richards (HI CD),
Gen Tamura (FEMA), Edward Young (NOAA), Adam Stein (NOAA), Chris Chiesa (PDC), Paula Dunbar (NOAA), Jesie Huart (NOAA)

PRiMO
PACIFIC RISK MANAGEMENT 'OHANA

NTHMP

WHY IS A PROTOCOL NEEDED?

Post-tsunami scientific field surveys are critical for improving the understanding of tsunamis and developing tools and programs to mitigate their effects. After a destructive tsunami, international, national, and local tsunami scientists need to gather information, much of which is perishable or degrades significantly with time. An influx of researchers can put stress on State and Local Governments already overwhelmed by humanitarian response to the disaster and by the demands of emergency management and other support agencies

A Protocol that is known about and respected by all stakeholders will ensure that a coordinated and comprehensive damage assessment is conducted in a responsible, respectful, and efficient manner to support emergency response, short-term recovery, long-term planning, and importantly, the fundamental tsunami research still needed to improve risk assessments and implement more effective mitigation measures. Our collective, collaborative efforts will then reach our customers, the affected population, in more meaningful and timely ways.

The US Protocol will follow from the principles and guidance provided by the international UNESCO IOC Post Tsunami Field Survey Guide (2nd edition) to be published in 2012.

Photo: Associated Press

WHAT IS PRiMO?

PRiMO, Pacific Risk Management O'hana, is a network of partners committed to enhancing the resilience of Pacific Islands through risk management. PRiMO recognizes the

PROTOCOL FOR POST-TSUNAMI FIELD SURVEYS

PROTOCOL COMPONENTS:

1. Contact designated event coordinator for situational awareness
2. Obtain Official survey badge
3. Coordinate with others
4. Include local experts/officials on your team
5. Check-in onsite
6. Heed all safety regulations
7. Be prepared to answer questions by locals
8. Prepare and provide survey/data collection plan to include regular field reports
9. Check-out, and provide out-briefing to response officials
10. Provide final data immediately to support response and recovery (3-12 months)

QUESTIONS FOR PARTICIPANTS

Would you readily share post-disaster, field data with impacted communities?

What would you want to see added/changed to field Protocol (provided above)?

Is an international/national organization needed to oversee field Protocol? Who would you suggest?

Would you like to be involved with developing formal field Protocol? If so, please provide contact info.

NTHMP POST-TSUNAMI INVOLVEMENT

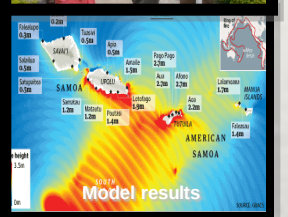
The National Tsunami Hazard Mitigation Programs (NTHMP) is a partnership sponsored by the National Oceanic and Atmospheric Administration (NOAA) involving relevant Federal agencies and coastal States/Territories. The NTHMP develops and coordinates effective tsunami hazard reduction efforts in the United States over the long term.

The NTHMP will appoint a representative to carry out their post-event response plan, which could incorporate support for this Protocol. Activities of the NTHMP and its representative will include:

1. Provide support to the International Tsunami Information Center (ITIC) and the impacted states/territories to help facilitate coordinated and efficient response activities.
2. Provide support to impacted states to ensure their needs are met by the field response teams, specifically sharing data that are acquired. This field data may include collection of physical evidence of the tsunami, impacts to structures, information about response effectiveness, and sociological observations about public response. Other data collected, such as post-event modeling, will also be collected by the NTHMP representative and provided to the impacted state(s) and NTHMP member.
   Work closely with the ITIC, PRiMO, FEMA, field response teams, and other participating organizations (National Science Foundation, Earthquake Engineering Research Institute, etc.) to address NTHMP needs, evaluate gaps in data collection exist, and help advise how to fill these gaps.

KEY PARTNERS

PHYSICAL SCIENTISTS/ENGINEERS: need quick access to collect ephemeral data
SOCIAL SCIENTISTS: interviews with public and officials essential to assessing lessons
EFFECTED COMMUNITIES/POPULATION: relying on help to assure a quick recovery
EMERGENCY RESPONDERS: need immediate info to assist in response /recovery



Photos: Rick Wilson (top and bottom left), Vasily Titov (top right), PMEL (bottom right)

PARTNER/COMMUNITY BENEFITS

EFFICIENT LOGISTICS: a speedy, coordinated response
BETTER QUALITY DATA: helping each other
SAFETY: protecting the community and the responders
RESPECT: understanding everyone's role and responsibility
COORDINATION: maximizing resources
COMMUNICATION: staying in touch with all of the partners
SITUATIONAL AWARENESS: what, when, where?
ACCOUNTABILITY: everyone is responsible for their actions
RECOVERY: recognition of and assistance with specific needs of community
RESILIENCY: preparing communities to reduce impact from future disasters

Photo: Lori Dengler

Science Stakeholders
Fall AGU meeting, 2011

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PROTOCOL PROGRESS - PLANS

0. post-Sept 2009 - Poorly-coord surveys, Incompl data share

1. **US POST-TSUNAMI PROTOCOL** - Working Group formed, American Samoa, PRiMO mtg, Mar 2011
2. **SCIENTIST FEEDBACK** – positive, Fall AGU, Dec 2011
3. **AMER SAMOA GOVERNOR** – listened, welcomed, Jan 2012
4. **NTHMP COORDINATION COMM -** endorsed Feb 2012
5. **COASTAL / RISK MGMT FEEDBACK** – positive, PRiMO Mtg, Mar
6. **FEDERAL WG ON DISASTER IMPACT ASSESSMENT PLANS** - incl tsunami annex, OFCM, WG/DIAP, Mar
7. **NSF RAPID RESPONSE WORKSHOP** - All-hazards scientist recommendations to NSF, Jun
8. **NSF NEES PROGRAM MGRS, NIST** – funds research, Jun
9. **FEMA HQ RESPONSE** - NRF, pre-cleared missions, Jun
10. **NTHMP MES / RISK WS** – MES/States approve, Risk feedback, Jul
11. **PROTOCOL PLAN** - draft 31 Aug; submit Oceanography, publ Dec

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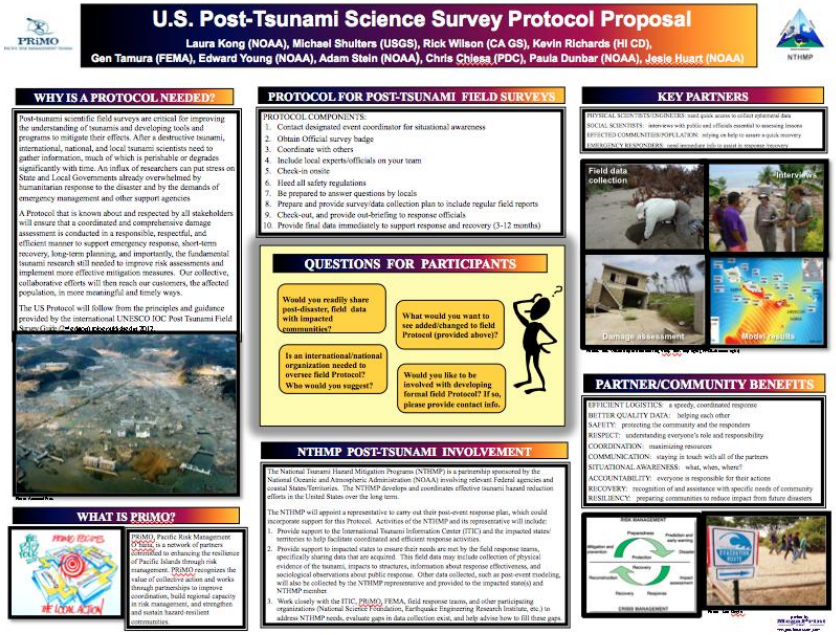
PROTOCOL COMPONENTS

1. **Contact Designated** event coordinator for situational awareness, planning, local support, etc
2. **Obtain Official** survey badge - access
3. **Coordinate** with others - govt, NGO, research
4. **Include Local** Experts/officials on your team
5. **Check-in** onsite - who, where, needs, hot spots/issues
6. **Heed all safety** regulations, liability
7. **Be prepared** to answer questions by locals – help, why
8. **Prepare and share plan / observations** (survey/data collection) - regular field reports
9. **Check-out** – summary out-briefing to officials
10. **Provide final data** - timely sharing for response and recovery (3-12 months), and for archiving (NGDC)



Thank You

Please send Feedback to

Laura Kong, ITIC, laura.kong@noaa.gov

Michael Shulters, USGS, shulters@usgs.gov

Rick Wilson, California Geological Survey, Rick.Wilson@conservation.ca.gov

Kevin Richards, Hawaii State Civil Defense, krichards@scd.hawaii.gov

Gen Tamura, FEMA Region IX, Gen.Tamura@fema.dhs.gov

Paula Dunbar, NGDC, Paula.Dunbar@noaa.gov